



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

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February 14, 2013

Walter Heller, Acting Highway Director, District 6
Massachusetts Department of Transportation
Highway Division
185 Kneeland Street, 10th Floor
Boston, MA 02111

Re: Final Acceptance of the Massachusetts Department of Transportation Central Artery/Tunnel
Project 2011 Renewal Operating Certification Under 310 CMR 7.38

Dear Mr. Heller:

Summary of 2011 Renewal Application for the Central Artery/Tunnel Project (CA/T Project) Operating Certification

On July 1, 2011, the Massachusetts Department of Environmental Protection (MassDEP) received a request from the Massachusetts Department of Transportation (MassDOT) to review and accept the renewal application for the Central Artery/Tunnel Project (CA/T Project) Operating Certification pursuant to "Certification of Tunnel Ventilation Systems in the Metropolitan Boston Air Pollution Control District," 310 CMR 7.38 (hereafter referred to as the "2011 Renewal Application"). MassDOT's 2011 Renewal Application included the Technical Support Document entitled, "Central Artery (I-93)/Tunnel (I-90) Project, Operating Certification of the Project Ventilation System" dated July 1, 2011, as well as several appendices. On July 28, 2011, MassDEP notified MassDOT that the 2011 Renewal Application was incomplete and required the submission of supplemental information to complete its review and to initiate the public review and determination process pursuant to 310 CMR 7.38(5). MassDOT provided the requested supplemental information to MassDEP in a revised 2011 Renewal Application on September 1, 2011. MassDEP reviewed this revised 2011 Renewal Application and found it to be complete on October 7, 2011. Once MassDEP determined that the 2011 Renewal Application was complete, pursuant to 310 CMR 7.38(5) and (11), MassDEP gave notice and held a public hearing on November 15, 2011 soliciting comments on the 2011 Renewal Application. The public comment period ended on November 18, 2011. MassDEP did not receive any public comments.

On December 19, 2011, the MassDEP issued a Conditional Acceptance, (hereafter referred to as the "2011 Conditional Acceptance") to MassDOT regarding its 2011 Renewal Application for the

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Central Artery/Tunnel Project (CA/T Project) Operating Certification. The 2011 Conditional Acceptance also approved MassDOT's request to submit a Supplemental Application on July 1, 2012, to provide additional information regarding the more stringent nitrogen dioxide (NO₂) NAAQS for MassDEP's review.

On July 1, 2012, MassDEP received MassDOT's Supplemental Application including the Technical Support Document entitled "Central Artery (I-93)/Tunnel (I-90) Project, Operating Certification of the Project Ventilation System" dated July 1, 2012, and several appendices (hereafter referred to as the "2012 Supplemental Application"). On July 17, 2012, MassDEP notified MassDOT that the 2012 Supplemental Application was incomplete pursuant to 310 CMR 7.38(5) and required the submission of additional information before MassDEP could complete its review and initiate the public review and determination process pursuant to 310 CMR 7.38(5). On July 19, 2012, MassDOT provided the additional information and on July 25, 2012, MassDEP determined that the 2012 Supplemental Application was administratively complete, pursuant to 310 CMR 7.38(5) and (11). MassDEP gave notice and held a public hearing on October 10, 2012, soliciting comments on the Supplemental Application. The public comment period ended on October 12, 2012. MassDEP did not receive any public comments.

Based on MassDEP's prior issuance of the 2011 Conditional Acceptance and the information contained in the 2012 Supplemental Application, MassDEP is approving the 2011 Final Acceptance of the Renewal Operating Certification (hereby referred to as the "2011 Final Acceptance"). MassDOT shall comply with all of the requirements contained in the 2011 Final Acceptance which incorporates the limits and requirements included in the 2011 Renewal Application, the 2012 Supplemental Application and the specific requirements detailed below. This letter constitutes approval of the 2011 Conditional Acceptance, now a Final Acceptance of the operating certification and this final acceptance expires on December 19, 2016.

BACKGROUND

1. Overview of Certification of Tunnel Ventilation Systems Regulation

The requirements of 310 CMR 7.38 apply to the construction and operation of any tunnel ventilation system for highways within the Metropolitan Boston Air Pollution Control District. The regulations, promulgated in 1990, provide for comprehensive and systematic air quality analysis of highway tunnel ventilation systems to ensure that the emissions from tunnel ventilation systems do not result in an exceedance of either the National Ambient Air Quality Standards (NAAQS) or MassDEP guidelines.

Pursuant to 310 CMR 7.38, no person shall construct or operate a tunnel ventilation system or open for general public use any project roadway without first certifying and receiving written acceptance by MassDEP that the project will not cause or exacerbate a violation of the NAAQS, air pollution guidelines, or criteria specified in 310 CMR 7.38(2)(a) through (c).

Pursuant to 310 CMR 7.38(4)(c), any operating certification accepted by MassDEP shall remain in effect for five years from the date of acceptance and shall contain such conditions as MassDEP deems necessary to meet the certification criteria established in 310 CMR 7.38(2)(a) through (c). At the time of the renewal, MassDEP shall apply the same criteria that apply to the acceptance of pre-

construction certification and the initial operation certification to the renewal of an operating certification.

2. Operating Certification and 2006 Final Acceptance

In accordance with 310 CMR 7.38(2), MassDOT submitted a preconstruction certification for the CA/T project to MassDEP that met all of the requirements in 310 CMR 7.38(3)a. MassDEP received MassDOT's preconstruction certification, and after review of the preconstruction certification, it held a public hearing and comment period. Pursuant to 310 CMR 7.38(3), MassDEP accepted the preconstruction certification on July 8, 1991. Once MassDEP accepted the certification, MassDOT could commence operation of the CA/T project.

In 2006, MassDOT submitted the 2006 Operating Certification Application which established Emission Limits for carbon monoxide (CO), nitrogen oxides (NO_x), and particulate matter 10 micron in diameter (PM₁₀). That application demonstrated that these Emission Limits would ensure compliance with the CO, NO₂, and PM₁₀ NAAQS and the NO₂ guidelines. It also established a regional emissions budget for volatile organic compounds (VOC). On December 22, 2006, MassDEP issued the Final Acceptance of the 2006 operating certification (hereafter referred to as the "2006 Final Acceptance"). The regulations require renewal of the operating certification every five years.

3. 2011 Renewal Application Summary

On July 1, 2011 and September 1, 2011, MassDOT submitted the 2011 Renewal Application. The 2011 Renewal Application included a Technical Support Document (TSD) divided into four parts:

- Part I – Ventilation System – Operation Emission Limits
- Part II – Compliance Monitoring Program
- Part III – Record Keeping and Reporting
- Part IV – Corrective Action.

The 2011 TSD included several appendices and attachments that MassDOT developed and relied upon as part of its certification application.

As required under 310 CMR 7.38(4)(c), the 2011 Renewal Application included demonstrations of required air quality compliance, summaries of air quality and traffic monitoring, a review of feasible control technologies, and procedure updates since 2006. In addition, the 2011 Renewal Application contained new particulate matter 2.5 micron in diameter (PM_{2.5}) emission limits. The new Emission Limits for PM_{2.5} would be used to demonstrate compliance with the new PM_{2.5} NAAQS. The new PM_{2.5} Emission Limits replace the PM₁₀ Emission Limits that were established as part of the 2006 Final Acceptance.

The 2011 Renewal Application included a request by MassDOT to submit a Supplemental Application by July 1, 2012 that would establish new Emission Limits for NO_x and CO. The need for the Supplemental Application was driven by the Environmental Protection Agency's (EPA) adoption of a new and more stringent NAAQS for NO₂ effective April 12, 2010. Under the Supplemental Application, MassDOT would collect one full year of CO, nitric oxide (NO), NO₂, and NO_x monitoring data at the Dewey Square Tunnel (DST) Portal and along the Albany Street

sidewalk locations to derive new emission limits for NO_x for all ventilation buildings and longitudinally ventilated ramps.¹ The one-year monitoring data would allow MassDOT to obtain real time data regarding the conversion rate of NO to NO₂ in order to establish new NO_x Emission Limits for compliance with the new 1-hour NO₂ NAAQS. (See Requirement 2 below on the new NO_x Emission Limits.) In addition, the one-year monitoring data would be used to establish new Emission Limits for CO and update the CO-NO_x correlation that would be used to determine compliance with the NO_x Emission Limits. Because NO_x levels are estimated as a function of in-tunnel CO levels, the analysis of one full year of CO, NO₂, NO, and NO_x data would also be used to update the CO-NO_x correlation that takes into account the newer emission profile from the current vehicle fleet. While MassDOT conducted the one year of monitoring, the Emission Limits for NO_x and CO contained in the 2006 Final Acceptance remained in effect until MassDEP issued a final acceptance of the 2011 Renewal Application.

After reviewing the 2011 Renewal Application, MassDEP issued the 2011 Conditional Acceptance with specific requirements (hereafter referred to as the "2011 Conditional Acceptance"). The 2011 Conditional Acceptance covers the five year operating period from December 19, 2011 through December 19, 2016. MassDOT was required to submit the Supplemental Application by July 1, 2012, to cover the remaining 4 year period from the date of MassDEP's approval of the Supplemental Application through December 19, 2016.

4. 2012 Supplemental Application Summary

On July 1, 2012, MassDOT submitted to MassDEP the 2012 Supplemental Application and Technical Support Document. For consistency, the 2012 Supplemental Application followed the same format of the 2011 Renewal Application TSD, retaining the aspects that remain unchanged and replacing or adding information, as needed. The 2012 Supplemental Application included appendices relevant to the establishment of CO and NO_x Emission Limits, new correspondence, and continuous emission monitoring (CEM) data.

In the 2012 Supplemental Application, MassDOT provided a summary of the monitoring program that collected one year of CO, NO_x, NO and NO₂ data at the DST Portal and at locations on the Albany Street sidewalk. It also described how data from the monitoring program were used to develop more accurate NO to NO₂ conversion factors in order to establish the new NO_x Emissions Limits.

The 2012 Supplemental Application also included the required demonstrations of air quality compliance, summaries of air quality and traffic monitoring results, a review of feasible control technologies and procedure updates since 2006 and 2011, and a summary of Corrective Actions through the first quarter of 2012. In addition, the 2012 Supplemental Application contained MassDOT's request to reduce the CEM program as a cost saving measure. MassDOT proposed the reduction of monitoring by eliminating the CEMs at certain ramps described below.

¹ The DST and Albany Street locations were selected because these are the most sensitive or worst-case locations based on modeling and operational data since 2006; as such, DST has the lowest allowable Emissions Limits for the entire CA/T Project.

SPECIFIC REQUIREMENTS OF THE 2011 FINAL ACCEPTANCE

1. CEM Elimination at Five Ramps

MassDOT is currently conducting continuous emissions monitoring at 15 locations throughout the CA/T Project that includes six ventilation buildings, seven ramps, and the DST.

In the 2012 Supplemental Application, MassDOT requested the reduction of CEM by eliminating the monitors at certain ramps. The five ramps proposed for elimination from CEM included ramps F, L-CS, SA-CN, ST-CN, and ST-SA.² These five ramps constitute relatively short tunnels (less than 1,200 feet each) that are not connected to the mainline tunnel ventilations system. The elimination of these five ramps from the CEM will result in significant labor savings for MassDOT. The equipment that will no longer be needed at the eliminated ramps will be refurbished and used as spares for the remaining monitoring sites.

Since 2006, monitoring data have shown consistently low levels of CO emissions at these five ramps: the average hourly CO emission levels were below 3.0 parts per million (ppm) compared to the allowable 1-Hour CO Emission Limits of 57 ppm to 70 ppm contained in the 2006 Operating Certification.³ Although the CO Emission Limit was exceeded on two occasions at Ramp L-CS, the exceedances were due to nighttime construction activity when the ramp was closed. The comparison of the CEMs data at these five ramps with the established Emission Limits confirms an absence of Emission Limit exceedances during any typical day-to-day operations, including peak periods of queued traffic conditions. The remaining three longitudinally ventilated ramps (CN-S, CS-SA, and CS-P), which are connected to the tunnel's mainline full transverse ventilation system, the DST, and all ventilation buildings (VBs) will continue the monitoring and reporting process of the current CEM program.

Since the CEMs conducted at the ventilation buildings and remaining ramp locations will provide appropriate monitoring data to ensure compliance with the established Emission Limits in Table 1 below, MassDEP hereby approves MassDOT's request to eliminate CEM requirements at Ramp F, L-CS, SA-CN, ST-CN, and ST-SA.

2. Emission Limits and Action Levels

a. Emission Limits

MassDEP approves the Emission Limits shown in Table 1 below that were developed to ensure that all NAAQS for CO, NO₂ and PM_{2.5} and MassDEP's One Hour NO₂ Guideline will not be violated in the CA/T Project area. Air pollutant emission rates from the CA/T Project shall be kept to the lowest practical level at all times, but shall not exceed the Emission Limits as specified in Table 1. In addition, NO_x Emission Limits for each Ventilation Zone are based upon the approved NO_x conversion factors (NO:NO₂), dilution ratios, and air quality modeling techniques appropriate for all respective vent building and longitudinally ventilated ramp applications.

²Ramp acronyms are defined as: I-90 Westbound to Congress Street (Ramp F), Leverett Circle to Central Artery Southbound (L-CS), Surface Artery to Central Artery Northbound (SA-CN), Storrow Drive to Central Artery Northbound (ST-CN), and Sumner Tunnel to Surface Artery (ST-SA).

³MassDEP compared the established Emission Limits for these ramps against the hourly measured CO levels between 2006 and 2012 as shown in Table 5-17 of the Supplemental Application, Technical Support Document.

Since there is no NAAQS for VOC, a concentration based emission limit is not viable. Instead, the 2011 Renewal Application uses a MassDEP approved method which compares current (2010 for 2011 renewal period) regional VOC emissions based on current project area traffic (vehicle miles travelled or VMT) and vehicle emission factors against a 2005 build year baseline emissions budget. The 2005 build year baseline emissions budget of 6,095.9 kg/day was established in the 2006 Operating Certification and is the baseline against which future renewal certification's VOC emission budgets shall be compared. The 2011 renewal application demonstrated that the VOC emissions budget in 2010 is 3,906.9 kg/day, well below the baseline emissions budget of 6,095.9 kg/day.

b. Demonstration of Compliance with Emission Limits

CEMs for CO are located in each Ventilation Zone in the CA/T Project area and will be used to obtain emission concentrations to compare against Emission Limits for CO. CEMs for PM_{2.5} that replace the CEMs for PM₁₀ are located in Vent Buildings 3, 5 and 7 and at the portal area of Ramp CS-SA.

MassDOT will use CEMs for CO at the remaining locations to obtain emission concentrations to compare against the Emission Limits for CO. In addition, MassDOT will use CEMs for PM_{2.5} emissions at Vent Buildings 3, 5, and 7 and an ambient monitor located at the portal area of Ramp CS-SA to compare against the Emission Limits for PM_{2.5}.

MassDOT will continue to use a CO/NO_x regression model to determine NO_x emission levels (from measured CO emission levels) for comparison with NO_x Emission Limits using separate modeling procedures for Ventilation Buildings and longitudinally ventilated ramps, including DST. The NO_x Emission Limits for each Ventilation Zone ensure that NO_x emissions will not exceed MassDEP's One-Hour Guideline for NO₂ or the NAAQS for NO₂.

Table 1. Summary of Emission Limits

Location*	1-Hr CO Emission Limit (ppm)	8-Hr CO Emission Limit (ppm)	1-Hr NO_x Emission Limit (ppm)	24-Hr PM_{2.5} Emission Limit (ug/m³)**
VB 1	70	70	6.1	900
VB 3	70	70	6.1	900
VB 4	70	70	6.1	900
VB 5	70	70	6.1	900
VB 6	70	70	6.1	900
VB 7	70	70	6.1	900
Ramp CN-S	37	58	3.4	NA
Ramp CS-SA	38	55	3.4	35***
Ramp CS-P	41	70	3.7	NA
DST	23	30	2.2	NA

Acronyms are defined as: Central Artery Northbound to Storrow Drive (CN-S), Central Artery Southbound to Surface Artery (CS-SA), Central Artery Southbound to Purchase Street (CS-P), Dewey Square Tunnel (DST), part per million (ppm), microgram per cubic meter (ug/m³).

* Each ventilation building location includes all associated ventilation zones.

** Compliance with the 24-hour PM_{2.5} NAAQS is based on the monitoring design value, which is given by the 3-year average of the annual 98th percentile value of daily average concentrations. The form of the standard allows, on average, for the numerical value of the standard (35 ug/m³) to be exceeded on seven calendar days per calendar year without triggering a violation of the NAAQS.

*** The ambient PM_{2.5} monitor is located outside ramp CS-SA.

c. Emission Action Levels

As part of the 2011 Final Acceptance, MassDEP hereby approves the CO and PM_{2.5} Emission Action Levels for Ventilation Zones contained in Table 2. The Emission Action Levels were established to minimize the potential for exceedances of the Emission Limits. As long as the CO and PM_{2.5} emissions remain below the CO, and PM_{2.5} Emission Action Levels for each Ventilation Zone in Table 2, emissions from the CA/T Project will not exceed the Emissions Limits in Table 1.

The Emission Action Levels for CO are set at approximately 80% of the CO Emission Limits. CO CEMs output shall be averaged over sixty minutes. The MassDOT's Highway Operation Center (HOC) display for each Ventilation Zone at any moment shall show the rolling average of the CO values from the CO CEMs over the preceding sixty minutes, which rolling 1-hour average will be updated at least every minute. This will enable HOC staff sufficient time to take corrective action.

The Emission Action Levels for PM_{2.5} are set by averaging CEM output over a rolling eight hour period instead of 24 hours, which is approximately one third of the time (24-hour Emission Limit). The HOC display for each Ventilation Zone at any moment shall show the rolling average of the PM_{2.5} values from the PM_{2.5} CEMs over the preceding eight hours, which rolling 8-hour average will be updated at least every minute. This will enable HOC staff sufficient time to take corrective action.

Table 2. Emission Action Levels

Location*	Rolling 1-Hour CO Emission Action Level (ppm)	Rolling 8-Hour PM_{2.5} Emission Action Level (µg/m³)**
VB 1	60	NA***
VB 3	60	900
VB 4	60	NA***
VB 5	60	900
VB 6	60	NA***
VB 7	60	900
Ramp CN-S	31	NA
Ramp CS-SA	32	35****
Ramp CS-P	36	NA
DST	20	NA

* Each ventilation building location includes all associated ventilation zones.

** Compliance with the 24-hour PM_{2.5} NAAQS is based on the monitoring design value, which is given by the 3-year average of the annual 98th percentile value of daily average concentrations. The form of the standard allows, on average, for the numerical value of the standard (35 µg/m³) to be exceeded on seven calendar days per calendar year without triggering a violation of the NAAQS.

*** VB 1, VB 4, and VB 6 do not have PM_{2.5} monitors. Action levels at VB 3, VB 5, and VB 7 will be used as surrogates for these locations.

**** Action level for ramp CS-SA is for 24 hours and is set to 100% of the 24-hour PM_{2.5} NAAQS.

3. Contingency Plan and Mitigation Plan

a. Contingency Plan

Pursuant to 310 CMR 7.38(4)(b), the 2011 Renewal Application and 2012 Supplemental Application include the required Contingency Plan (hereafter referred to as the "Contingency Plan") which must be implemented when the Emission Limits in Table 1 are exceeded. (See the 2011

Renewal Application and the Supplemental Application Part IV– CORRECTIVE ACTIONS for the Contingency Plan.) MassDEP accepts MassDOT’s Contingency Plan as part of this final approval.

The primary aim of MassDOT’s Contingency Plan is to implement pre-emptive actions when the Action Levels are exceeded in order to avoid exceedances of Emission Limits. This approach relies on in-tunnel CO and PM_{2.5} monitoring data from each ventilation zone that triggers the HOC to increase ventilation rates to avoid exceedances of Emission Limits. MassDOT’s Contingency Plan includes this commitment to alternative tunnel ventilation system operations and maintenance procedures for CO, NO_x, and PM_{2.5} for all ventilation zones as described below.

In the unlikely event that an Emission Limit is exceeded, MassDOT shall comply with the following procedures as proposed in the Contingency Plan. First, MassDOT shall verbally notify MassDEP of this exceedance within 12 hours of such an occurrence. This verbal notification shall be followed with a written notification to MassDEP within 48 hours of the Emission Limit exceedance. The written notification shall be made to MassDEP, Bureau of Waste Prevention, Division of Air and Climate Programs, Transportation Management Programs Branch, 1 Winter Street, Boston, MA 02108. MassDOT shall verbally notify Transportation Management Programs Branch by calling 617-292-5500; if unable to reach staff directly, MassDOT shall contact MassDEP’s Emergency Response at 888-304-1133.

Second, MassDOT shall perform an Emission Limit Assessment (ELA)⁴ to determine whether the Emission Limit exceedance may cause or contribute to a violation of the relevant NAAQS or MassDEP guideline. The revised ELA contained in the 2012 Supplemental Application includes different procedures for emission limit assessments at ventilation buildings and longitudinally ventilated ramps, including DST (See Attachment A to the Supplemental Application). Moreover, to conform to EPA’s new one-hour NO₂ NAAQS and what constitutes a NAAQS violation, a separate statistical approach was required to evaluate NO₂ monitoring data. Accordingly, the ELA approach proposed in the 2012 Supplemental Application is now in-line with the procedures used for the PM_{2.5} NAAQS. The ELA will include the use of site-specific meteorological and background conditions at the time of the exceedance.⁵ Meteorological data collected by the National Weather Service at Boston’s Logan International Airport is acceptable. The analysis shall be provided within three business days from the date MassDOT receives background conditions data collected by MassDEP to MassDEP, Bureau of Waste Prevention, Division of Air and Climate Programs, Transportation Management Programs Branch, 1 Winter Street, Boston, MA 02108. Based on MassDOT’s analysis, if MassDEP determines that a violation of a NAAQS or MassDEP One Hour NO₂ Policy Guideline has occurred, MassDEP will post a notice of the violation on MassDEP’s web site within ten business days of DEP’s determination and in the MEPA Environmental Monitor as a matter of public record.

As part of the 2011 Final Acceptance, MassDEP hereby approves MassDOT’s revised ELA approach effective immediately. In addition, MassDEP approves MassDOT’s approach, which triggers interagency consultation to discuss possible mitigation measures when three exceedances of

⁴ An ELA is a modeling analysis that examines the air quality conditions including the NO₂ concentrations, the background emissions, the wind speed and the wind direction at the time of the emission limit exceedance for each designated receptor within the vicinity of the subject ventilation building or longitudinally ventilated ramp where an emission limit was exceeded.

⁵ At the time of the written notification to MassDEP, MassDOT must obtain meteorological data and request background concentrations during the exceedance time period necessary to perform the ELA.

the NO₂ NAAQS occur in a single year at one location for any ventilation building location, longitudinally ventilated ramps, and DST as described in Attachment A of the 2012 Supplemental Application.

b. Mitigation Plan

Pursuant to 310 CMR 7.38(6), if MassDEP determines that a violation of a NAAQS or MassDEP One Hour NO₂ Policy Guideline has occurred or are likely to be violated, MassDOT must submit a Mitigation Plan to MassDEP for review and approval that complies with the requirements in 310 CMR 7.38 (6)(a) and (b).

4. Operational Requirements When There Are Exceedances of Action Levels

MassDOT shall use the CEM equipment installed at certain Ventilation Zones and longitudinally ventilated ramps shown in Table 3 to determine real-time CO and PM_{2.5} emissions and to trigger alarms when CO or PM_{2.5} Action Levels, as defined in Table 2, are reached.

Table 3. Ventilation Zones associated with each PM_{2.5} CEMs

PM _{2.5} Monitor location	Ventilation Buildings and Zones in which to increase ventilation rate	
	Ventilation Building	Ventilation Zone
VB 3 in Ventilation Zone Northbound 1 (NB-1)	3	NB-1 and NB-2
	4	NB-3 and NB-4
VB 3 in Ventilation Zone Southbound 1 (SB-1)	3	SB-1
	4	SB-2 and SB-3
	DST Air Intake Structure	DST
VB 5 in Ventilation Zone Westbound 2 (WB-2)	5	WB-2 and WB-3
	1	Ramp D I-90 WB to I-93 NB and both parts of I-90 WB
	6	WB
	7	WB-2 and WB-3
VB 7 in Ventilation Zone Eastbound 2 (EB-2)	7	EB-2, EB-3 and Ramp T-A/D
	5	EB-2 and EB-3
	6	EB
	1	I-90 EB and both parts of Ramp L/HOV for I-90 EB
Ramp CS-SA	4	*

* Ramp CS-SA Action Level response described above.

When a CO Action Level is exceeded, the CO alarm is triggered which requires HOC staff to increase supply and exhaust air fan speeds (to maintain stable air flows where available) in an affected Ventilation Zone and continue to increase fan speeds until CO emission levels are below the alarm set point (i.e., Action Level).

When a PM_{2.5} Action Level is exceeded, the PM_{2.5} alarm is triggered which requires HOC staff to increase the ventilation rate to a minimum of Step 3 in the affected Ventilation Zone location as indicated in Table 3. HOC staff shall continue to modify fan speeds until PM_{2.5} emission levels are below the alarm set point (i.e., Action Level) as indicated in Table 2. MassDOT shall also

investigate the cause of the exceeded emission Action Level and take appropriate corrective measures as necessary.

Ramp CS-SA represents an ambient location, and as such, any increased ventilation rate at this location may not remediate PM_{2.5} levels. When the Action Level for ramp CS-SA is exceeded, MassDOT shall investigate the cause of the Action Level exceedance. If the investigation identifies outside tunnel conditions, such as the presence of idling vehicles or a pattern of traffic congestion at Ramp CS-SA traffic sufficient to cause an Action Level exceedance, then MassDOT shall make a good faith effort to work with the Boston Transportation Department (BTD) to develop an interagency agreement to implement one or more remedial actions by BTD, including but not limited to increased enforcement of anti-idling laws, changing the traffic signalization affecting Ramp CS-SA, eliminating left turn options, or adding a police detail to facilitate the movement of traffic in the Ramp CS-SA area. The purpose of developing an interagency agreement is to establish the means to expeditiously implement remedial actions to address the influence of outside tunnel conditions. If the investigation identifies inside tunnel conditions including traffic patterns sufficient to cause an Action Level exceedance, then MassDOT shall implement alternative ventilation system operations and maintenance at Ramp CS-SA.

For DST, MassDOT shall continue to operate the ventilation fans for the Dewey Square Air Intake Structure, along with Ventilation Zone SB-1 from VB 3, at Step 3 each weekday afternoon from 2:30 p.m. to 6:00 p.m., at a minimum. The 2:30 p.m. start time for Step 3 ventilation settings helps ensure sufficient ventilation in advance of predictable p.m. peak period traffic conditions.

Furthermore, MassDEP approves as part of the 2011 Final Acceptance, MassDOT's additional operating procedures designed to minimize future exceedances of Emission Limits, including those exceedances related to nighttime maintenance activities that may occur in proximity to the CEM sampling probes.⁶ MassDOT shall implement the following procedures:

1. Reprogram the DST alarm system to operate with a 15-minute rolling average Action Level;
2. Direct the HOC operator to manually increase the ventilation for the full southbound CA/T tunnel (including DST-AIS, VB 3 (southbound 1) and VB 4 (southbound 2 and 3)) to Step 3 in response to an Action Level alarm, and beyond Step 3 if the CO level does not decrease within the following 15-minute period; and
3. Investigate the feasibility of modifying the Integrated Project Control System (IPCS) in order to automate the alarm response for all listed ventilation zones.

MassDEP understands that items 1 and 2 have been implemented and that MassDOT is on schedule to complete item 3 by April 1, 2013 and will submit monthly updates to MassDEP thereafter until full program implementation. MassDOT submittals shall be sent to MassDEP, Bureau of Waste Prevention, Division of Air and Climate Programs, Transportation Management Programs Branch, 1 Winter Street, Boston, MA 02108.

⁶ This is in response to the June 21 & 22, 2012, Emission Limit Exceedance of the 1-Hour CO Emission Limit at the Dewey Square Tunnel (I-90 Collector). MassDEP acknowledges receipt of MassDOT's letter dated November 9, 2012, in response to MassDEP's letter dated July 31, 2012, and as follow-up on October 10, 2012, discussions between MassDEP and MassDOT and their consultants.

5. Updates on Development of Parcels 6 and 12 and DST Partial/Full Build

The required modeling used to establish Emission Limits for CO and NO_x in the 2006 Final Acceptance showed that future development at Parcels 6 and 12 would require more stringent emission limits for affected ventilation zones including Ramps CS-SA, ST-SA, and DST to protect sensitive receptors that would exist after completion of the development. In response, the 2006 Final Acceptance required MassDOT to provide MassDEP with a written annual update regarding the status of ramp covers and development activities at these three locations starting in February 1, 2008.

The 2011 Final Acceptance requires that such written updates continue yearly until completion of the above described developments. These updates shall also indicate whether the sensitive receptors used by MassDOT to develop the post-development Emission Limits have changed or are likely to change, such that even stricter Emission Limits would be required. Accordingly, MassDOT shall submit the annual updates on February 1st of each year.

6. Incident Remedial Measures

MassDOT's 2006 Final Acceptance included Response Procedures for HOC to manage and remediate incidents, such as breakdowns, collisions, and blockages (not including tunnel fires) that might occur in the tunnel system and could affect the nature and extent of emissions regulated under 310 CMR 7.38. Based on observations of incidents and response, MassDEP has determined that the Response Procedures developed by MassDOT to deal with such incidents are still necessary and shall remain in effect.

In the event of an incident, the main Response Procedure activities are to:

1. Identify an incident and notify Incident Response Operations (IRO);
2. Assess the incident;
3. Remove the problem from the tunnel;
4. Ramp-up fans in impacted Ventilation Zone(s);
5. Update MassDOT traffic warning system and web site;
6. Check traffic queue to make sure that initial incident has not caused additional problems; and
7. Contact Boston Emergency Medical Services/Boston Fire Department, as necessary.

7. Emergency Conditions

An "emergency condition" means any situation arising from sudden and/or reasonably unforeseeable events beyond the control of MassDOT, including acts of God, which would require immediate corrective action to protect public safety, and that causes the ventilation zone to exceed an Emission Limit due to unavoidable increases in emissions attributable to the emergency. The most likely emergency situation envisioned by this definition is a vehicle fire in one of the tunnels. However, an emergency condition does not include situations arising from improperly designed equipment, lack of preventative maintenance, careless or improper operations, or operator error.

In the event that an emergency situation (e.g., a vehicle fire in one of the tunnels), MassDOT shall follow the notification procedures outlined under Requirement 3 and provide MassDEP with the

following information through properly signed, contemporaneous operating logs, or other relevant evidence that demonstrates:

1. An emergency incident occurred within the CA/T Project area and that MassDOT can identify the nature and circumstances of the emergency;
2. The ventilation systems in those sections of the project area not affected by the emergency were properly operated at the time;
3. MassDOT took all reasonable steps as expeditiously as possible after the emergency incident was rectified to restore normal operations and minimize levels of emissions that would exceed the emissions limits, or instituted other actions required in this Final Acceptance;
4. Relevant public safety agencies responded to the emergency as documented in incident reports or official records of the event from the responding agencies; and
5. If an emergency episode requires immediate notification to the MassDEP Bureau of Waste Site Cleanup/Emergency Response, notification to the appropriate parties shall be made as required by law and regulation.

8. Compliance Monitoring

As required by 310 CMR 7.38(8)(a), MassDOT shall continue to operate CO and PM_{2.5} CEMs as detailed in the Continuous Emissions Monitoring Air Emissions Monitoring Protocol (AEMP) submitted and approved as part of the 2011 Renewal Application. If MassDOT proposes to modify the approved AEMP, a revised protocol must be submitted to MassDEP prior to the modification being made. Major modifications to the AEMP, as determined by MassDEP, are subject to the public hearing process in 310 CMR 7.38(5) and only approved modifications may be implemented. Minor modifications to the AEMP necessary to refine and/or improve data collection from time to time, such as changes to Standard Operating Procedures and material substitution, must be submitted to and approved by MassDEP in writing prior to implementation of a modification.

In addition, MassDOT shall continue to monitor traffic within the project area as required by 310 CMR 7.38(8)(b). MassDOT shall record hourly traffic volumes at the following four locations:

1. I-93 Southbound in the vicinity of Causeway Street
2. I-93 Northbound in the vicinity of South Station
3. I-90 Westbound in East Boston
4. I-90 Eastbound in the vicinity of Fort Point Channel

Peak hourly, peak daily, and average daily traffic volumes at each of the four locations shall be reported to MassDEP as detailed in Section 9 below.

9. Record Keeping and Reporting Requirements

Pursuant to the requirements of 310 CMR 7.38(9)(a)1, all records and data from the CEMs and traffic count recorders described below shall be maintained by MassDOT for a period of five years. The most recent two years of data shall be readily available to MassDEP for inspection.

a. Emissions Data

MassDOT shall file monthly emission reports as described in Subsection 5.5 on pages 5-115 and 5-116 of the 2012 Supplemental Application,⁷ no later than 30 days following the end of each month for the calendar year 2013 and quarterly thereafter. Emission reports shall be sent electronically to Leslie.Collier@state.ma.us, a hardcopy to MassDEP, Air Assessment Branch, Quality Assurance Section, 37 Shattuck Street, Lawrence, MA 01843-1398, and a hardcopy of the transmittal letter with the CEM Data Summary sheets and the Traffic Data to MassDEP, Bureau of Waste Prevention, Division of Air and Climate Programs, Transportation Management Programs Branch, 1 Winter Street, Boston, MA 02108. Emission reports shall contain a summary of continuous monitoring data showing any excursions above Emission Limits contained in the 2011 Final Acceptance. Evidence of each calibration event on the monitoring devices shall be included in the emission reports. Emission reports shall be submitted electronically, via storage media or e-mail. Emission reports shall contain ESC data files of calibrations and hourly monitoring results. In addition, a summary of any second-party audits conducted during the reporting period must be included. The summary reports should identify the monitors audited, the types of test conducted, and the outcome of the tests (e.g., pass/fail). Within 30 days of receipt by MassDOT of MassDEP comments on data validation documentation or status flags, MassDOT shall submit revised data files to MassDEP.

b. Traffic Data

MassDOT shall collect and record traffic data as described in Subsection 5.3 on page 5-114 of the 2012 Supplemental Application,⁸ in the mainline tunnels in compliance with 310 CMR 7.38(9)(a)3. Data for traffic monitoring shall include at a minimum hourly and daily traffic volumes for both directions in I-93 and I-90. This data shall be submitted no later than 30 days following the end of each month for the calendar year 2013 and quarterly thereafter to MassDEP. MassDOT shall file traffic data no later than 30 days following the end of each reporting period (monthly or quarterly). Traffic data reports shall be sent to MassDEP, Bureau of Waste Prevention, Division of Air and Climate Programs, Transportation Management Programs Branch, 1 Winter Street, Boston, MA 02108.

c. Ventilation System Maintenance

As required by 310 CMR 7.38(9)(a)4, MassDOT shall file ventilation system maintenance reports. Each ventilation zone has multiple exhaust fans that serve that zone. Multiple fan redundancy enables routine and non-routine fan maintenance to occur with no loss of ventilation capacity. MassDEP requires that whenever any ventilation zone is reduced to only one available supply or one available exhaust fan because of routine or unscheduled, non-routine maintenance, MassDOT shall follow the notification procedures as outlined under Requirement 3 above and provide MassDEP with ventilation system maintenance reports. The written reports shall include a summary of maintenance checks performed, repairs to ventilation equipment, the days and the amount of time of the occurrences during which ventilation equipment was not operating in accordance with standard operation procedures, and measures taken to remediate the situation. Ventilation system maintenance reports shall be sent to MassDEP, Bureau of Waste Prevention, Division of Air and Climate Programs, Transportation Management Programs Branch, 1 Winter Street, Boston, MA 02108.

⁷ Central Artery (I-93)/Tunnel (I-90) Project Operating Certification of the Project Ventilation System: Supplemental Application Technical Support Document (Final Report, August 1, 2012).

⁸ Ibid.

d. Removal and Maintenance of Monitoring Equipment

As required by 310 CMR 7.38(10), MassDOT shall notify MassDEP if any equipment used to monitor emissions is removed, altered or rendered inoperative, or if there is unexpected and unavoidable failure of equipment that requires equipment removal or alteration, other than for routine maintenance periods. MassDOT shall provide MassDEP with a verbal notification within one day when monitoring equipment is removed, altered or rendered inoperative, or if there is unexpected and unavoidable failure of equipment. MassDOT shall follow up with a written notification and explanation within seven days. The written notification shall be sent to MassDEP, Bureau of Waste Prevention, Division of Air and Climate Programs, Transportation Management Programs Branch, 1 Winter Street, Boston, MA 02108.

In addition, on or before April 1, 2013, MassDOT shall submit to MassDEP for review and approval a proposal on how it intends to address:

1. the necessary resources needed to maintain a reliable CEM program with existing equipment in the short term; and
2. a replacement program of the aging CEM equipment throughout the project area in the long term.

The proposal shall be sent to MassDEP, Air Assessment Branch, Quality Assurance Section, 37 Shattuck Street, Lawrence, MA 01843-1398 and the Bureau of Waste Prevention, Division of Air and Climate Programs, Transportation Management Programs Branch, 1 Winter Street, Boston, MA 02108.

10. Compliance Certification

All documents submitted to MassDEP shall contain certification by a responsible official, as defined in 310 CMR 7.00, of truth, accuracy, and completeness. Such certification shall be in compliance with 310 CMR 7.01(2) and contain the following language:

"I certify that I have personally examined the foregoing and am familiar with the information contained in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including possible fines and imprisonment."

11. Noncompliance

Any noncompliance with this 2011 Final Acceptance constitutes a violation of 310 CMR 7.38 and is grounds for enforcement action. Pursuant to 310 CMR 7.38(6), if MassDEP finds that one or more of the criteria set forth in 310 CMR 7.38(2)(a) through (c) or any requirement of this 2011 Final Acceptance is being violated, or is likely to be violated: MassDOT shall (i) implement the measures in the Contingency Plan identified and required in Requirement 3 above; and (ii) if required by MassDEP, shall submit to MassDEP for its review and approval a Mitigation Plan which fully complies with 310 CMR 7.38(6)(a) and (b).

Noncompliance may also be grounds for assessment of administrative or civil penalties under M.G.L. c.21A, §16 and 310 CMR 5.00; and civil penalties under M.G.L. c.111, §142A and 142B. This 2011 Final Acceptance does not relieve MassDOT from the obligation to comply with any other provisions of 310 CMR 7.00 or the Clean Air Act, or to obtain any other necessary authorizations from other governmental agencies, or to comply with all other applicable Federal, State, or Local rules and regulations, not addressed in the 2011 Final Acceptance.

12. Deviations

Deviations are instances where any requirement of the 2011 Final Acceptance is violated at a time other than an emergency condition pursuant to Requirement 7 above. Reporting a deviation is not an affirmative defense for action brought for noncompliance. In addition to the Emission Limit exceedance notification requirements in Requirement 3 above, MassDOT shall report within three business days of discovery of such deviations to MassDEP, Bureau of Waste Prevention, Division of Air and Climate Programs, Transportation Management Programs Branch, 1 Winter Street, Boston, MA 02108. Deviations of requirements contained in this 2011 Final Acceptance include:

1. Failure to comply with a requirement of the 2011 Final Acceptance;
2. Failure to capture sufficient valid emissions monitoring data or to maintain monitoring equipment as required by the 2011 Final Acceptance; and
3. Failure to perform QA/QC measures as required by the 2011 Final Acceptance.

13. 2011 Final Acceptance Term and Renewal

The 2011 Final Acceptance shall expire on December 19, 2016.

The CA/T Project may continue to operate under the 2011 Final Acceptance until MassDEP issues the final acceptance of the subsequent renewal application in 2016. In the event MassDEP has not taken final action on the subsequent renewal application prior to the expiration date of the 2011 Final Acceptance, the requirements in the 2011 Final Acceptance shall remain in effect until MassDEP takes final action on the subsequent renewal application, provided that a timely and complete renewal has been submitted in accordance with 310 CMR 7.38.

14. Reopening for Cause

The 2011 Final Acceptance may be modified, revoked, reopened, and reissued, or terminated for cause by MassDEP. The filing of a request by MassDOT for an acceptance revision, re-issuance, or termination, or a notification of a planned change or anticipated noncompliance will not stay any requirement of the 2011 Final Acceptance.

15. Duty to Provide Information

Upon MassDEP's written request, MassDOT shall furnish, within a reasonable time, any information necessary for determining whether cause exists for modifying, revoking and reissuing, or terminating this 2011 Final Acceptance, or for determining compliance with this 2011 Final Acceptance. Upon request, MassDOT shall furnish to MassDEP copies of records that MassDOT is required to retain by this 2011 Final Acceptance.

16. Duty to Supplement

MassDOT, upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the 2011 Renewal Application or 2012 Supplemental Application, shall promptly submit such supplementary facts or corrected information. MassDOT shall also provide additional information as necessary to address any requirements that become applicable to the CA/T Project after the date a complete subsequent renewal application is submitted but prior to release of a final acceptance of the subsequent renewal application.

MassDOT shall promptly, on discovery, report to MassDEP a material error or omission in any records, reports, plans, or other documents previously provided to MassDEP and not already reported.

17. Inspection and Entry

Upon presentation of credentials and other documents as may be required by law, MassDOT shall allow authorized representatives or contractors of MassDEP to:

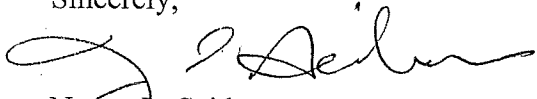
1. Enter upon MassDOT premises where the CA/T Project's activity is located or emissions-related activity is conducted, or where records must be kept under the requirements of the 2011 Final Acceptance;
2. Have access to and copy, at reasonable times, any records that must be kept under the requirements of the 2011 Final Acceptance;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under the 2011 Final Acceptance; and
4. Sample or monitor at reasonable times any substances or parameters for the purpose of assuring compliance with the 2011 Final Acceptance.

18. Severability Clause

The provisions of the 2011 Final Acceptance are severable, and if any provision of the 2011 Final Acceptance or the application of any provision of the 2011 Final Acceptance to any circumstances is held invalid, the application of such provision to other circumstances, and the remainder of the 2011 Final Acceptance, shall not be affected thereby.

Should you have any questions, please call Jerome Grafe of MassDEP's Division of Air and Climate Programs within the Bureau of Waste Prevention at 617-292-5708 or email; Jerome.Grafe@state.ma.us.

Sincerely,



Nancy L. Seidman
Assistant Commissioner
Bureau of Waste Prevention

cc. Rick McCullough, MassDOT, Director Environmental Engineering, District 6